

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference 257-Q-04-PCT	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/IL2007/001398	International filing date ( <i>day/month/year</i> ) 13 November 2007 (13.11.2007)	Priority date ( <i>day/month/year</i> ) 13 November 2006 (13.11.2006)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant Q-CORE LTD.		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> .1(a).																								
2.	This REPORT consists of a total of 6 sheets, including this cover sheet.																								
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.																									
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44 <i>bis</i> .3(c) and 93 <i>bis</i> .1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44 <i>bis</i> .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Date of issuance of this report 19 May 2009 (19.05.2009)
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## PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
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PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 257-Q-04-PCT		Date of mailing (day/month/year) <b>11 JUN 2008</b>
International application No. PCT/IL07/01398		FOR FURTHER ACTION See paragraph 2 below
International filing date (day/month/year) 13 November 2007 (13.11.2007)	Priority date (day/month/year) 13 November 2006 (13.11.2006)	
International Patent Classification (IPC) or both national classification and IPC IPC: <b>F04B 43/08( 2006.01),43/12( 2006.01),45/06( 2006.01)</b> USPC: 417/474,475,476,477.1-477.14		
Applicant Q- CORE LTD.		

## 1. This opinion contains indications relating to the following items:

- |                                     |              |  |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the opinion   |
| <input type="checkbox"/>            | Box No. II   | Priority   |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability   |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention   |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited  |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application   |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application  |



## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

## 3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Date of completion of this opinion 6/2/08	Authorized officer Devon Kramer  Telephone No. 571-272-3700 
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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/IL07/01398

## Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of:
- ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of:
- a. type of material
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material
    - ☐ on paper
    - ☐ in electronic form
  - c. time of filing/furnishing
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in electronic form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application No.  
PCT/IL07/01398**Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-5</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>NONE</u>	NO
Industrial applicability (IA)	Claims <u>1-5</u>	YES
	Claims <u>NONE</u>	NO

**2. Citations and explanations:**

Please See Continuation Sheet

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IL07/01398

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

**V. 2. Citations and Explanations:**

Claims 1, 3, and 4 lack novelty under PCT Article 33(2) as being anticipated by Watanabe et al.

In Reference to Claim 1

Watanabe et al. teach a finger-type peristaltic pump (see figure 6), comprising a plurality of pressing-fingers (fingers (10-1, 10-2, 10-3, 10-4, 10-5)), infusion-tube (tube (2)), and a passive interfacing mechanism (pump body base (3) and door base (4) snap together to hold the tube in place); wherein said passive interfacing mechanism comprising (a) a means for accommodating said flexible infusion tube and mounting said tube in a location suitable for said pressing-fingers to apply an approximated perpendicular force on said tube to squeeze it (see figure 7 where the tube is being squeezed by the fingers); (b) a ribbed anvil (back plate members (130, 131, and 132) support the tube when it is pressed by the fingers, and have spaces between them so that they are arranged in a rib like manner) rigidly supporting said tube on opposite side to said pressing fingers when it is pressed by said finger; said anvil comprising one or more ribs of a group including a plurality of ribs oriented to face said fingers' tip (the ribs (130, 131, and 132) are arranged opposite the fingers).

In Reference to Claim 3

Watanabe et al. teach the finger-type peristaltic pump according to claim 1, wherein one or more of said ribs is of a different width as compared with others ribs (reference ribs) (see figure 6 where rib 130 is wider than rib (132), which is wider than rib (131)), so as less pressing force is required by a given finger for shutting off said infusion-tube against narrower ribs, as compared with reference ribs of wider width, and vice versa, more force is required for pressing said tube by a given finger against wider ribs as compared with reference narrower ribs (The amount of force would naturally depend on the size of the rib as well as the size of the pressing finger. Watanabe et al. teach a device where the width of the fingers and ribs varies from finger to finger, and as such the force applied by the fingers onto the tube would also vary.).

In Reference to Claim 4

Watanabe et al. teaches the finger-type peristaltic pump according to claim 1, wherein one or more of said ribs is of a different width as compared with others ribs (reference ribs) (see figure 6 where rib 130 is wider than rib (132), which is wider than rib (131)), so as squeezed volume of the infused fluid per pumping cycle can be calibrated (As can be seen in figure 7, the amount of fluid pumped is calibrated based on how much force the fingers apply to the tube, which depends on the size of the fingers as well as the size of the ribs.).

Claims 1 and 2 lack novelty under PCT Article 33(2) as being anticipated by Pickering.

In Reference to Claim 1

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/IL07/01398

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Pickering teaches a finger-type peristaltic pump (see figure 3), comprising a plurality of pressing-fingers (plungers 82, 84, and 86), infusion-tube (tube (22)), and a passive interfacing mechanism (cover portion (12) which serves to hold the tube in place); wherein said passive interfacing mechanism comprising (a) a means for accommodating said flexible infusion tube and mounting said tube in a location suitable for said pressing-fingers to apply an approximated perpendicular force on said tube to squeeze it (see figure 3 where tube is sandwiched between cover (12) and base portion (14) in such a way that the tube can be pressed by the plungers (82, 84, and 86)); (b) a ribbed anvil rigidly (cover portion (12) has extendable ribs (112, 114, and 116), see column 8 lines 15-27) supporting said tube on opposite side to said pressing fingers when it is pressed by said finger (see figure 3); said anvil comprising a plurality of ribs including a plurality of ribs oriented to face said fingers' tip (the ribs (112, 114, and 116) are arranged opposite the fingers).

In Reference to Claim 2

Pickering teaches the finger-type peristaltic pump according to claim 1, wherein by changing the heights of one or more of said ribs it is possible to calibrate the squeezed volume of the infused fluid per pumping cycle (Pickering teaches that the extendable ribs (112, 114, and 116) are adjustable by screwing them further into and out of the housing. Adjusting them in such a manner would necessarily control the volume of the pumped fluid that is pumped per cycle. See column 8 lines 15-27); said squeezed volume is defined by ribs of a nominal height (Pickering describes a 'normal' state of adjustment when the outer fingers completely close the tube, and the inner fingers do not quite close the tube.), so as the ratio between squeezed volume per revolution and the speed of the pumping mechanism can be calibrated (The adjustable ribs (112, 114, and 116) would necessarily allow this to occur).

Claims 1 and 5 lack novelty under PCT Article 33(2) as being anticipated by Heminway et al.

In Reference to Claim 1

Heminway teaches a finger-type peristaltic pump (see figure 1), comprising a plurality of pressing-fingers (fingers (41-46)), infusion-tube (tube T), and a passive interfacing mechanism (door (67) holds the tube in place along with the pump body (12)); wherein said passive interfacing mechanism comprising (a) a means for accommodating said flexible infusion tube and mounting said tube in a location suitable for said pressing-fingers to apply an approximated perpendicular force on said tube to squeeze it (see figure 1 where the tube is sandwiched between the door (67) and the pump body (12) in such a manner that the tube can be pressed by the fingers (41-46)); (b) a ribbed anvil (plate (67) has thin metal projections (51-54) that act as ribs interposed between the pressing fingers) rigidly supporting said tube on opposite side to said pressing fingers when it is pressed by said finger (see figure 1 as well as columns 3-4 lines 60-14); said anvil comprising a plurality of ribs located in between said fingers (see figure 1).

In Reference to Claim 5

Heminway et al. teach a method for obtaining a predetermined flow capacity, comprising steps of obtaining a DDS as defined in claim 1 (the pump as shown in figure 1) or in any of its dependent claims for pumping an infusion fluid; and adjusting the specifications of one or more of said ribs, especially altering its height, width and/or profile characteristics so as various tubes or tube types can be utilized by said DDS without a preliminary requirement of calibrating pumping characterizations (Heminway et al. disclose that the pump unit is designed in such a manner that the space between the ribs and the fingers is less than the diameter of the tubing, so that the tubing is always slightly compressed. This helps prevent fatigue in the tube and prevents a loss of flow rate, see column 5 lines 3-30. Thus the height of the ribs and the length of the fingers are altered to provide an optimal flow rate.).

Claims 1-5 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.